Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matters of	)	
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147
	)	
and	)	
	)	
Implementation of the Local Competition Provisions in the Telecommunications Act of 1996	)	CC Docket No. 96-98

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Pursuant to the Commission's Public Notice, DA 00-2036, released September 6, 2000, AT&T Corp. ("AT&T") submits these comments in response to the Commission's Second Further Notice of Proposed Rulemaking in CC Docket No. 98-147 and Fifth Further Notice of Proposed Rulemaking in CC Docket No. 96-98 ("FNPRM").

The Commission has the opportunity in these remand proceedings to undertake a thorough review of its collocation policies and to establish rules that clarify the full extent of the incumbent LECs' duties under Section 251(c)(6). Congress understood that collocation is vitally important to the ability of new entrants to compete using interconnection or access to unbundled network elements, and expressly provided in Section 251(c)(6) that incumbents have a duty to provide collocation of equipment necessary for interconnection and access to unbundled network elements on terms that are just, reasonable and nondiscriminatory. 47 U.S.C. § 251(c)(6). The Commission implemented Section 251(c)(6) in its *Local Competition* and *Collocation Orders*, and made clear that incumbents were required to permit collocation of equipment that was in any way used for either interconnection or access to unbundled elements.

The D.C. Circuit remanded the Commission s determinations on a very narrow ground. The Court found that the Commission's previous orders had not adequately established a limiting principle, and that the "literal terms" of its orders could be read to permit collocation of potentially *any* functionality, no matter how unrelated to interconnection or access to unbundled network elements. *GTE Service Corp.* v. *FCC*, 205 F.3d 416, 422-25 (D.C. Cir. 2000). The Court did *not* question, however, the Commission's authority to order collocation of any specific telecommunications functionalities, such as optical terminating equipment, multiplexers, DSLAMs, routers, ATM multiplexers, remote switch modules, or any other equipment that new entrants typically collocate. Rather, the Court merely remanded the matter to the Commission to permit the Commission to reconsider its "impermissibly broad" interpretation of Section 251(c)(6).

On remand, the Commission should now recognize that the terms of Section 251(c)(6) establish three important principles that define the scope of new entrants' rights to collocate equipment on incumbent LECs' premises. Part I below shows that, first, incumbent LECs' Section 251(c)(6) duties go beyond mere physical connections to the incumbent's network, because the Commission has always defined the statutory terms "interconnection" and "access" to unbundled network elements more broadly. Second, although the term "necessary" does not need to be interpreted this restrictively, at a minimum, the term at least encompasses situations in which, absent the ability to collocate particular equipment, (i) new entrants would be precluded from providing at least some services to at least some customers through the use of unbundled network elements or interconnection, or (ii) the new entrant could not offer service of the same quality as the incumbent through the use of unbundled network elements or interconnection. Under either of those circumstances, the subject equipment is "necessary" for

interconnection and access to unbundled elements under any plausible definition of the term. And third, Section 251(c)(6) requires that collocation must be available on terms and conditions that are "just, reasonable, and nondiscriminatory," which means that where equipment has functionalities and capabilities that are necessary for interconnection or access to unbundled network elements, the statute prohibits incumbents from denying collocation of additional functionalities in multifunctional equipment that does not consume any appreciable additional space in the central office.

Under these standards, the Commission should adopt national rules requiring incumbent LECs to permit collocation of transmission and switching functionality. First, equipment performing transmission functions is "necessary," under any definition of that term, for interconnection or access to unbundled network elements, because the only available alternative to collocating such equipment would be to deploy copper pairs for interoffice transport facilities, which would be prohibitively expensive and would preclude competition. Second, incumbents must also permit collocation of equipment that performs switch functions, including remote switch modules and packet switches. Collocation of switch functions is necessary because it allows new entrants to use scarce transmission resources more efficiently, and denial of the right to collocate such equipment would be discriminatory because switch equipment also performs transmission functions while consuming no more (or even less) space than comparable transmission-only equipment.

The Commission should also adapt its local competition rules to the changes that are occurring in technology and the market. As discussed in Part II.A below and in greater detail in the attached Declaration of Joseph Riolo, technological changes are underway in the loop plant that mirror to some degree changes that have already occurred for interoffice facilities. As

incumbents implement these changes in their loop plant, Part II.B shows that they hold quite new and significant implications for competition. Part II.C demonstrates, however, that these changes do not – and cannot – alter the basic function of a loop or competitive LECs' fundamental need for access to their customers. As shown in Part II.D, the incumbents' introduction of new loop architecture provides no legal or policy basis for the Commission to contract its current definition of the local loop, which defines that element to include "attached electronics."

The Commission's rules limiting competitive LECs' access to packet switching are also directly related to the new loop architecture. As shown in Part II.E, those rules already recognize that access to "spare copper" loops is not a viable substitute for access to the entire capability of a loop that is provided through use of next generation architecture. Further, a review of the facts concerning the architecture and economics of remote terminals (Part II.F) shows that collocation at such disparate remote points is virtually always infeasible for competitive LECs. Moreover, for the reasons explained in Part II.G, the Commission's rules should be modified to recognize that DSLAM functionality – especially when deployed in a remote terminal loop architecture – performs only a multiplexing (*i.e.*, transmission enhancing rather than packet switching) function and therefore should also be included within the definition of the loop. Finally, Part II.H explains why the Commission's rules must assure that incumbents must not discriminate between affiliates and nonaffiliates in planning changes in their loop architectures and that competitors have appropriate access to information about incumbents' proposed changes to their loop plant.

Finally, as shown in Part III below, the Commission should adopt national rules governing space provisioning and reservation policies modeled on rules adopted by the states.

I. THE COMMISSION SHOULD ADOPT NATIONAL RULES UNDER SECTION 251(C)(6) THAT REQUIRE INCUMBENT LECS TO PROVIDE COLLOCATION OF EQUIPMENT THAT PERFORMS TRANSMISSION AND SWITCHING FUNCTIONS.

Collocation is essential to most facilities-based local competition. Congress recognized that it would be impossible for new entrants to provide most facilities-based services without the ability to collocate their own facilities in the incumbent LEC's central office in close proximity to the incumbent's switches and loops. In the wake of the D.C. Circuit's remand in *GTE Service Corp.*, it is now more important than ever for the Commission to establish national rules that clarify new entrants' rights to collocate equipment that performs transmission and switching functionalities. As the history of these proceedings makes abundantly clear, incumbent LECs have demonstrated the ability to impede competitive entry by insisting on unreasonable restrictions on collocation, and therefore the Commission should establish clear and comprehensive standards to prevent unnecessary disputes and delay. *Cf. Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order, 11 FCC Rcd. 15499 (¶ 55) (1996) ("*Local Competition Order*") ("[n]egotiations between incumbent LECs and new entrants are not analogous to traditional commercial negotiations" and "incumbent LECs have strong incentives to resist [their statutory] obligations"); *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, 14 FCC Rcd. 4761 (¶ 29) (1999) ("*Collocation Order*") (noting ILEC opposition to collocation of functionalities related to advanced services as an "obstacle to competition").

A. The D.C. Circuit Held Merely That the "Literal Terms" Of The Commission's Previous Orders Were "Impermissibly Broad" Because They Contained No Limiting Principle And Could Be Read To Permit The Collocation Of Any Functionality.

The Commission has consistently recognized that the ability to physically collocate transmission and switching functionalities is necessary to offer local

telecommunications services in competition with incumbent LECs. While the D.C. Circuit rejected the Commission's broad interpretation of the term "necessary" in Section 251(c)(6), the Court did *not* question the Commission's more specific conclusions that the statute requires incumbent LECs to permit collocation of particular functionalities, such as optical terminating equipment, multiplexers, and even remote switch modules. The Court held merely that the Commission's previous orders failed to establish a limiting principle and thus could be read to require the incumbents potentially to permit the collocation of *any* functionality, no matter how unrelated to interconnection or access to unbundled network elements. *See GTE Service Corp.*, 205 F.3d at 423-25.

Congress recognized that physical collocation is centrally important to the ability of new entrants to offer competitive services, and therefore when it enacted the Telecommunications Act of 1996 (the "1996 Act"), Congress "completely revamped the statutory landscape by providing explicit congressional authorization for physical collocation." *GTE Service Corp.*, 205 F.3d at 419. In the 1996 Act, Congress adopted a new national policy of promoting competition in all telecommunications markets, and in so doing Congress imposed by statute a broad duty to provide physical collocation of equipment necessary to achieve the full range of competitive entry.[1] The new Section 251(c)(6) expressly requires incumbent LECs to

[1] The Commission had first ordered physical collocation in 1992 to permit competitive access providers ("CAPs") to use a combination of CAP and ILEC facilities to provide interstate special access services in competition with the incumbents. *Expanded Interconnection with Local Telephone Company Facilities*, Report and Order and Notice of Proposed Rulemaking, 7 FCC Rcd. 7369, 7413 (¶ 93) (1992) ("*Expanded Interconnection Order*") (adopting rules requiring Tier 1 incumbent LECs to permit collocation of transmission facilities, including "optical terminating equipment and multiplexers," to provide special access). From the beginning, the incumbent LECs have uniformly opposed physical collocation, and they sought review of the Commission's original rules in the D.C. Circuit. On review, the D.C. Circuit found that Section 201(a) of the Communications Act did not authorize the Commission to order physical collocation. *Bell Atlantic Tel. Cos.* v. *FCC*, 24 F.3d 1441, 1445-46 (D.C. Cir. 1994).

"provide, on rates, terms, and conditions that are just, reasonable, and nondiscriminatory, for physical collocation of equipment necessary for interconnection or access to unbundled network elements at the premises of the local exchange carrier." 47 U.S.C. § 251(c)(6).

The Commission first adopted rules implementing Section 251(c)(6) in its *Local Competition Order*. *See Local Competition Order* at ¶¶ 579-82. In that order, the Commission interpreted the term "necessary" in Section 251(c)(6) to mean "used" or "useful," and thus promulgated a rule requiring physical collocation "of equipment used for interconnection or access to unbundled network elements." *See id.* ¶ 579 (adopting 47 C.F.R. § 51.323(b)). Since 1996, however, incumbent LECs have aggressively opposed physical collocation of many specific types of equipment, and new entrants have been forced to litigate such disputes throughout the country in order to exercise their rights under Section 251(c)(6). *See, e.g., MCI Telecommunications Corp.* v. *U S WEST*, 204 F.3d 1262 (9th Cir. 2000) (upholding right of new entrants to collocate remote switch modules); *AT&T Communications of Virginia, Inc.* v. *Bell Atlantic-Virginia, Inc.*, 197 F.3d 663 (4th Cir. 1999) (same). In 1999, the Commission noted the widespread unwillingness on the part of incumbents to permit collocation and issued an order clarifying that its rules required incumbent LECs to permit collocation of DSLAMs, routers, ATM multiplexers, remote switch modules, and any other multi-functional equipment that was in some way used for interconnection or access to unbundled network elements. *See Collocation Order* ¶¶ 26-31.[2]

[2] The Commission specifically concluded that these clarifications were "particularly important given the rapid pace of technological change in the telecommunications equipment marketplace," and it found that "[i]n order to compete effectively in the advanced services marketplace, competitive telecommunications providers must be permitted to collocate integrated equipment that . . . increases the services they can offer their customers." *Id.* ¶ 29.

The incumbents responded by again seeking review in the D.C. Circuit. The Court held that the Commission's interpretation of "necessary" to mean "used or useful" was "impermissibly broad." *GTE Service Corp.*, 205 F.3d at 424. Specifically, the Court held that "the Collocation Order *as presently written* seems overly broad and disconnected from the statutory purpose enunciated in § 251(c)(6)," because the order would potentially require the collocation of *any* functionality, no matter how unrelated to interconnection or access to unbundled network elements. *Id.* at 422 (emphasis added). As an example, the Court noted that the order would require an incumbent LEC to "afford collocation of a competitor's equipment that included unnecessary multi-purpose features, such as enhancements that might facilitate payroll or data collection features." *Id.* at 424. The Court was concerned that, although "collocation on such broad terms would not really square with the terms of § 251(c)(6)," the "*literal terms*" of the order "seem to embrace any and all equipment that is otherwise necessary without regard to whether such equipment *unnecessarily* 'includes . . . other functionalities.'" *Id.* (quoting *Collocation Order* ¶ 28) (emphasis added). In addition, the Court found that the Commission's justification of the rule on grounds of "presumed cost savings" was inconsistent with the Supreme Court's interpretation of the term "necessary" in Section 251(d)(2)(A). *See id.* at 424 (quoting *AT&T Corp.* v. *Iowa Utils. Bd.*, 525 U.S. 366, 389-90 (1999) ("the Commission's assumption that *any* increase in cost (or decrease in quality) imposed by denial of a network element renders access to that element 'necessary' . . . is simply not in accord with the ordinary and fair meaning of [the statute's] terms")) (emphasis added).

Accordingly, the Court remanded the case to the Commission for further consideration. The Court emphasized that it did "not mean to vacate the Collocation Order to the extent that it merely requires LECs to provide collocation of competitors' equipment that is

directly related to and thus necessary, required, or indispensable to interconnection or access to unbundled network elements." *Id.* at 424. Indeed, the Court did *not* question the Commission's authority to order collocation of any specific telecommunications functionalities, such as optical terminating equipment, multiplexers, DSLAMs, routers, ATM multiplexers, remote switch modules, or any other equipment that new entrants typically collocate. The Court held simply that the Commission's previous rule, to the extent that its "literal terms" potentially required the collocation of *any* functionality, "ma[de] no sense in light of what the statute itself says." *Id.*

B. In Interpreting Section 251(c)(6), the Commission Should Recognize Three Important Principles.

On remand, the Commission now has the opportunity to respond to the Court's concerns and adopt national rules implementing Section 251(c)(6) that are more consistent with the statute as interpreted by the D.C. Circuit. In so doing, however, the Commission should acknowledge that when it originally adopted its broad interpretation of the term "necessary" in the very time-compressed local competition proceedings in 1996, it left other equally important aspects of Section 251(c)(6) unaddressed. Thus, the Commission has the opportunity in these remand proceedings not only to respond to the D.C. Circuit's concerns regarding its interpretation of the term "necessary," but to undertake a more thorough examination of Section 251(c)(6) and assure that its rules establish the full extent of the incumbent LECs' duties under the statute.

Accordingly, the Commission should now recognize that the terms of Section 251(c)(6) establish three important principles that define the scope of new entrants' rights to collocate equipment on incumbent LECs' premises. First, incumbent LECs' Section 251(c)(6) duties go beyond mere physical connections to the incumbent's network, because the Commission has always defined the statutory terms "interconnection" and "access" to unbundled

network elements more broadly. In particular, the Commission has made clear that "access" to unbundled network elements requires more than a mere physical connection to an element; it also requires that competitors must have the ability to "use" all of the features, functionalities, and capabilities of the element. Similarly, "interconnection" is defined in the statute as interconnection that is "equal in quality" to that which the incumbent provides to itself. This also requires more than a bare physical connection.

Second, although the term "necessary" does not need to be interpreted this restrictively, at a minimum, the term encompasses situations in which, absent the ability to collocate particular equipment, (i) new entrants would be precluded from providing at least some services to at least some customers through the use of unbundled network elements or interconnection, or (ii) the new entrant could not offer service of the same quality as the incumbent through the use of unbundled network elements or interconnection. Under either of those circumstances, the subject equipment is "necessary" for interconnection and access to unbundled elements under any plausible definition of the term.

Third, Section 251(c)(6) requires that collocation must be available on terms and conditions that are "just, reasonable, and nondiscriminatory." Thus, where equipment has functionalities and capabilities that are necessary for interconnection or access to unbundled network elements, the statute prohibits incumbents from denying collocation of additional functionalities in multifunctional equipment that does not consume any appreciable additional space in the central office. The only purpose of prohibiting the collocation of such additional functionality would be an anticompetitive one that would necessarily be unjust, unreasonable, and discriminatory.

1. Collocation of Equipment Necessary for "Access" to UNEs and "Interconnection." First, the term "necessary" in section 251(c)(6) must be placed in the context of the entire provision. Although the incumbents have repeatedly invoked the Supreme Court's treatment of the "necessary" and "impair" standards in *Iowa Utilities Board* to support their restrictive construction of the collocation duty, the incumbents' position is largely based on their demonstrably mistaken view of the scope of the statutory terms "interconnection" and "access." For example, throughout their briefs to the Court of Appeals, GTE and the other incumbent petitioners repeatedly substituted the term "connection," or its cognates, for the term "access."[3] Contrary to the incumbents' suggestion, the Commission has always interpreted those terms more broadly to encompass considerably more than mere "physical connections."

For example, the Commission squarely held in the *Local Competition Order* that "the term[] 'access' to network elements . . . mean[s] that incumbent LECs must provide the facility or functionality of a particular element to requesting carriers," and "further conclude[d] that a telecommunications carrier purchasing access to an unbundled network facility is entitled *to exclusive use* of that feature, function, or capability." *Local Competition Order* at ¶ 268 (emphasis added). Thus, the Commission properly, and expressly, rejected Pacific Bell's argument that the Act "does not require unbundled elements to be provisioned in a way that would make them useful." *Id.* Consistent with the statutory definition of "network element," the Commission has likewise repeatedly reaffirmed that a carrier that purchases "access" to an

[3] *See, e.g.*, Brief of Petitioners at 12 ("Section 251(c)(6) . . . is narrowly tailored to authorize a physical occupation of incumbent carriers' private property only insofar as 'necessary' to allow a competing carrier to connect its facilities with those of the incumbent"); 16 ("Under the FCC's new rules, therefore, a competitor may install . . . any piece of equipment . . . regardless of whether that equipment is used to perform functions other than interconnection").

element is entitled to *all* of the features, functions and capabilities of that element.[4] Moreover, the Commission's rules entitle competitors to such access in a manner that enables them "to provide any telecommunications service that can be offered by means of that network element." 47 C.F.R. § 51.307(c).

These interpretations were more than simply reasonable. They were compelled by the statute's terms and purposes, for if the term "access" meant simply "connection," an incumbent could satisfy its nondiscriminatory access obligation by permitting a requesting carrier to physically connect to an element even though the incumbent simultaneously prevented the requesting carrier from actually using that element's functionalities. To "access" an element is therefore to be able to "use" all of the capabilities of the element to provide a telecommunications service.

Therefore, as long as a particular functionality is required to make full use of a feature, function, or capability of an unbundled network element, the plain terms of the statute require that incumbents permit collocation of that functionality. For this reason, the precise construction of the term "necessary" is largely academic in the context of equipment with multiplexing, switching and other functionalities ordinarily employed in "using" a network element. In other words, requesting carriers have the right under the Act to collocate not only equipment that performs the narrow functions of termination and interconnection, but also multi-use equipment that is required in order to make *full* use of the element in question. For example, as explained more fully below, equipment that performs multiplexing, protocol conversion, and packet switching functions is "necessary," under any definition of that term, to make use of the

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[4] *See, e.g., MCI Declaratory Petition Order*, FCC 00-139, ¶ 9; *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, Third Report and Order and Fourth Report and Order, 14 FCC Rcd. 20912, ¶ 17 (1999) (*"Line Sharing Order"*).

full features and capabilities of the unbundled loop, which the Commission has defined to include high-capacity loops and loops conditioned to provide advanced services. *See Implementation of the Telecommunications Act of 1996,* Third Report and Order and Fourth Notice of Proposed Rulemaking, 15 FCC Rcd. 3696, ¶¶ 172-73, 176-77 (1999) ("*UNE Remand Order*").

The Commission should also read Section 251(c)(6)'s duty to permit collocation of equipment necessary for "interconnection" in conjunction with Section 251(c)(2). Specifically, Section 251(c)(2)(C) expressly provides that the incumbent must provide interconnection that is "at least equal in quality to that provided by the [incumbent LEC] to itself or to any subsidiary, affiliate, or any other party to which the carrier provides interconnection." 47 U.S.C. § 251(c)(2)(C). In the *Local Competition Order*, the Commission confirmed that the incumbents must provide "interconnection" that is "equal in quality" to that available to the incumbent itself and that this obligation is "not limited to the quality perceived by end users." *Local Competition Order* ¶ 224.

The "quality" of the interconnection provided, however, cannot be separated from the equipment to be collocated. In other words, "equipment necessary for interconnection" is the equipment necessary to achieve interconnection that is equal in quality to that which the incumbent provides to itself or others. For this reason, the precise interpretation of the term "necessary" is again largely academic. Optical terminating equipment, multiplexers, and other supporting equipment that permits remote monitoring and maintenance functions, are all "necessary," under any definition of the term, to enable collocating carriers obtain the equal-in-quality interconnection required by Section 251(c)(2).[5]

[5] This standard would, of course, preclude collocation of non-telecommunications equipment, such as equipment performing "payroll" and "data collection" functions, because such equipment

2. The Interpretation of the Term "Necessary." Of course, the Commission must also respond specifically to the D.C. Circuit's concerns about the Commission's previous interpretation of the term "necessary." On remand, regardless of the precise definition of the statutory term "necessary," the Commission should conclude, at a minimum, that collocation of particular equipment that performs a particular telecommunications functionality is "necessary," if, without the right to collocate such equipment, (1) the cost of providing service would increase to the point that, in a significant number of cases, CLECs would not offer that service through interconnection or UNEs, or (2) CLECs would be unable to offer service through interconnection or UNEs that has the same quality as the incumbent's offering.

In *GTE Service Corp.*, the D.C. Circuit was concerned that the Commission's broad interpretation of "necessary" in Section 251(c)(6) was inconsistent with the Supreme Court's interpretation of the same term in Section 251(d)(2)(A). *See GTE Service Corp.*, 205 F.3d at 423-24; *Iowa Utils. Bd.*, 525 U.S. at 386-392. Section 251(d)(2)(A) provides "[i]n determining what network elements should be made available for purposes of [Section 251(c)(3)], the Commission shall consider, at a minimum, whether access to such network elements as are proprietary in nature is necessary." In *Iowa Utilities Board*, the Supreme Court held that what it termed "the Commission's assumption [in the *Local Competition Order*] that *any* increase in cost (or decrease in quality) imposed by denial of a network element renders access to that element 'necessary' . . . is simply not in accord with the ordinary and fair meaning of [the statute's] terms." *See Iowa Utils. Bd.* 525 U.S. at 389-390 & n.11.

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is not necessary either to establish equal-in-quality interconnection or to enable the collocating carrier to use the features and functionalities of unbundled network elements. *Cf. GTE Service Corp.*, 205 F.3d at 424.

When it responded to the Supreme Court's concerns on remand, the Commission concluded that "a proprietary network element is 'necessary' within the meaning of section 251(d)(2)(A) if, taking into consideration the availability of alternative elements outside the incumbent's network, including self-provisioning by a requesting carrier or acquiring an alternative from a third-party supplier, lack of access to that element would, as a practical, economic, and operational matter, preclude a requesting carrier from providing the services it seeks to offer." *UNE Remand Order* ¶ 44. The Commission found that this standard was consistent with the Supreme Court's decision in *Iowa Utilities Board*, because it "focuses on the competitor's ability to furnish a desired service, and not merely on whether profits are increased by using the incumbent's network." *Id.* ¶ 45.

Moreover, the Commission recognized that, in adopting a national rule, the Commission should determine whether the "necessary" and "impair" standards were satisfied on a *general* basis, rather than on a case-by-case basis. *Id.* ¶¶ 53-55. As the Commission found, "the Act is designed to create a regulatory framework that requires incumbent LECs to make network elements subject to the unbundling obligations of section 251 available to *all* requesting carriers, subject to the requirements of section 251(d)(2), and allows the marketplace to determine ultimately which competitors thrive or survive." *Id.* ¶ 53 (emphasis added). Thus, the Commission rejected incumbent LEC arguments that the "impair" standard would not be satisfied if it could be shown that *some* competitors had found a way to offer service without using the unbundled network element. *Id.* ¶ 54.[6] The Commission properly found that it "cannot

[6] The Commission explained, "[i]n some markets, particularly those markets serving high-volume business customers, it may be practical and economical for competitive LECs to compete using self-provisioned facilities," but that "[i]n other markets, however, typically those markets consisting of residential consumers and small businesses, the delay and costs associated with self-provisioning a network element would preclude those same competitors, or others, from

evaluate the needs of every potential carrier seeking access to each network element on a case-by-case basis" (*id.*), and thus it adopted national rules based on general findings that, absent unbundling, competitors would in many cases be "impaired" or precluded from offering service.

The Commission should apply similar principles in this context. First, it should find that various types of equipment that perform telecommunications functionalities are "necessary" for interconnection or access to unbundled network elements at a minimum if, absent collocation, new entrants' costs of providing service would increase to the point that CLECs would be precluded from providing at least some telecommunications services through interconnection or access to UNEs in at least some areas, or that the CLEC would be precluded from offering service through interconnection or access to UNEs at the same quality as the incumbent. Second, as in the *UNE Remand* proceeding, the Commission should promulgate collocation rules based on findings concerning the conditions facing CLECs generally. Like Section 251(c)(3), Section 251(c)(6) imposes a general duty to provide physical collocation to *all* requesting carriers, subject to the requirements of that section. As in the *UNE Remand Order*, the Commission should find that the fact that some CLECs may be able to establish alternative arrangements in the absence of collocation to offer service in some circumstances "is not dispositive" of whether equipment is "necessary" for interconnection or access to unbundled elements under Section 251(c)(6). *UNE Remand Order* ¶ 54.

This standard is fully consistent with the statute and with the D.C. Circuit's opinion in *GTE Service Corp.*, because it focuses on whether CLECs would be precluded from providing service in some substantial set of circumstances, rather than mere "presumed cost savings" or increased profits. *See GTE Service Corp.*, 205 F.3d at 424; *UNE Remand Order* ¶

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assuming the risk of entry, unless they can purchase unbundled elements from the incumbent."

45. And by focusing on *telecommunications* functionalities, the standard would clearly preclude competitors from seeking to collocate, for example, equipment used "to facilitate payroll features," which the D.C. Circuit feared the prior rules would allow. Payroll functions, although essential to the operation of a competing carrier's *general* business, are wholly ancillary to the functionalities of the incumbent's network, and thus are not required to obtain equal-quality interconnection or to obtain full use of the functionalities of unbundled elements. *Cf. GTE Service Corp.*, 205 F.3d at 424 (noting that the literal terms of the *Collocation Order* required collocation of *any* "other functionalities," whether or not they were telecommunications functionalities).

3. "Just, Reasonable, and Nondiscriminatory" Terms for Collocation of Equipment That is Necessary for Interconnection or Access to UNEs. Finally, Section 251(c)(6)'s express requirement that incumbent LECs provide collocation on terms that are "just, reasonable, and nondiscriminatory" is also relevant to the question of what equipment can be placed in a collocation space. Specifically, that statutory language prohibits incumbents from precluding the collocation of multi-purpose telecommunications equipment, especially when it consumes no more space than comparable "single-use" equipment.

As the Commission is well aware, since 1996 incumbent LECs have aggressively sought to limit new entrants' rights to collocate multi-purpose equipment that may perform both transmission and other telecommunications functionalities (such as switching), and the incumbents' intransigence has given rise to extensive nationwide litigation. *See, e.g., MCI Telecommunications Corp.*, 204 F.3d 1262 (upholding right of new entrants to collocate remote switch modules); *AT&T Communications of Virginia, Inc.*, 197 F.3d 663 (same). In the

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UNE Remand Order ¶ 54.

Collocation Order itself, the Commission found that technological advances were enabling equipment vendors increasingly to make equipment that integrates many functions, including, for example, the ability to integrate transmission functions (such as multiplexing) with packet switching or other advanced service functions. *See, e.g., Collocation Order* ¶ 31 (finding a "technological trend towards integrated telecommunications equipment" and citing record support); *see also Local Competition Order* ¶ 581 ("[w]e recognize, however, that modern technology has tended to blur the line between switching equipment and multiplexing equipment"). Indeed, much of the impetus of the *Collocation Order* was to quell these disputes and to reaffirm that, because of the increasing prevalence of more efficient, multi-purpose equipment, "requiring competitive LECs to purchase single-function equipment would relegate competitors to less efficient equipment and create unnecessary roadblocks to competitive entry." *See Collocation Order* ¶ 31.

Therefore, where certain of the functionalities in multi-use equipment are "necessary" for interconnection or access to unbundled network elements, incumbent LECs are required to permit collocation of multi-function equipment if the additional, non-"necessary" functionalities do not cause the equipment to consume appreciably more space than comparable "single-use" equipment. Much of today's integrated equipment easily fits inside a standard collocation cage and is no larger than comparable equipment that performs solely transmission functions. As a result, collocation of such equipment does not raise any legitimate takings concern.

The incumbents' refusal to permit collocation of such equipment could have only one purpose – increasing the costs or limiting the scope or quality of new entrants' competing services. Accordingly, such refusal would constitute an unjust, unreasonable and discriminatory

term and condition of collocation. Indeed, the incumbent LECs use such integrated equipment because it was developed, after all, to meet their need to increase the efficiencies of their own network architectures. Denying the same right to new entrants, in the absence of any true Takings Clause concern, would be patently discriminatory.

Moreover, the Commission has already concluded that the best way to promote carriers' investment in advanced services is to permit new entrants to deploy their own packet switching equipment in collocated space. As the Commission found in the *UNE Remand Order*, numerous competitive LECs had collocated (or planned to collocate) advanced services equipment in a substantial number of central offices across the country. *UNE Remand Order* ¶ 307. Although the Commission found that the costs and delays associated with the process of obtaining collocation from incumbents "impaired" new entrants' ability to offer advanced services (*id.* ¶ 309), the Commission nonetheless concluded that marketplace evidence demonstrated that new entrants' ability to offer service over their own facilities through collocation was the best means of promoting rapid entry and investment in advanced services (*see id.* ¶¶ 313-17).[7] Under those circumstances, incumbent LEC attempts to limit new entrants' ability to use such multi-function equipment would be unreasonable and discriminatory.[8]

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[7] Indeed, the incumbent LECs themselves argued that the Commission should not order unbundling of packet switching, on the grounds that facilities-based competition from new entrants (through the use of collocation) was the best means of preserving the incumbents' incentive to invest in broadband capabilities. *See UNE Remand Order* ¶ 314; *see, e.g., Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, Comments of SBC Communications, Inc., pp. 39-41 (filed May 26, 1999).

[8] The Commission's decision in the *UNE Remand Order* not to order unbundling of packet switching was expressly premised on the Commission's findings that new entrants were able to self-provide such functionality by using collocation arrangements. *UNE Remand Order* ¶¶ 313-17. Therefore, if the Commission were now to conclude that new entrants are *prohibited* from collocating such functions (as it should not), the Commission would have to reconsider its decision not to order unbundling of packet switching under the "impairment" standard of Section 251(d)(2).

C. The Commission Should Expressly Find That Incumbent LECs Must Permit Collocation of Equipment That Performs Transmission and Switching Functions.

Based on the three principles identified above, the Commission should establish on remand that certain specified categories of equipment are eligible for collocation under one or more of the standards described above. The Commission obviously cannot, in the face of rapidly changing technology, determine in advance for each and every type of equipment whether it qualifies for collocation. Nevertheless, because incumbent LECs have the incentive and ability to use that change and uncertainty to delay and impede competition, the Commission should establish a presumption (that would be rebuttable by the incumbent LEC) that the following functionalities are necessary for interconnection and access to network elements and therefore may be collocated by CLECs.

1. Transmission Functions. There is no question that the Commission should reaffirm that CLECs are entitled to collocate equipment that performs transmission functions, including signal generation functions, conductor optimization functions (including concentration and multiplexing functions), and signal delivery functions. See Declaration of Robert Fontera and Thomas Hill ¶¶ 6-17 (hereafter Frontera/Hill Decl.) (describing transmission functions). Indeed, the Commission has recognized since 1992 that collocation of equipment that performs transmission functions is necessary to provide competitive services. *Expanded Interconnection Order* at ¶ 93 (adopting rules requiring Tier 1 incumbent LECs to permit collocation of transmission facilities, including "optical termination equipment and multiplexers," to provide special access).

First, equipment performing transmission functions is "necessary," under any definition of that term, for interconnection or access to unbundled network elements, because the only available alternative to collocating such equipment would be to deploy interoffice transport

facilities that would be prohibitively expensive. As the Commission has previously recognized, CLECs that deploy their own interoffice transport must incur "significant direct and other costs, including the cost of fiber, the cost of deploying fiber in public rights of way, [and] trenching." *UNE Remand Order* ¶ 356 (citing record evidence that "the cost of purchasing interoffice transport equipment exceeds $300 per line, and that the cost of constructing alternative transport facilities . . . are between $200,000 and $300,000 per mile in densely populated areas"). Therefore, when CLECs do deploy their own interoffice transport, they must deploy the highest capacity transport facilities possible (today, generally multistrand fiber-optic facilities with associated transmission equipment). Frontera/Hill Decl. ¶¶ 19-22.

Incumbent LECs, however, deliver unbundled loops to the new entrant's collocation cage at low transmission rates, typically in an electrical, analog format. Indeed, the vast majority of loops are analog voice grade loops (64 kbps) with few exceeding transmission rates of 1.544 Mbps. *Id.*. ¶ 20. New entrants cannot directly interconnect such facilities with high capacity optical interoffice transport facilities. Several transmission functions must be performed first: the new entrant must (1) terminate the facility; (2) provide for concentration (because not all lines are active at the same time); (3) convert the signals on active lines from an analog format to a digital format (to achieve appropriate transmission accuracy); (4) perform multiplexing and possibly buffering functions (to utilize the capacity of the facilities); and (5) convert the signal from electrical to optical and perform other multiplexing and assignment functions in order to place the signal on the interoffice fiber transport facility. *See id.* ¶¶ 21-22.

If new entrants could not perform these functions in the central office with physically collocated equipment, they would literally have to rely on copper pairs for interoffice transport. Such arrangements would be a "logistical nightmare in any typical central office and

would be fatal to competition," for several reasons. *Id.* ¶ 24. First, extending metallic lines out of the central office would be a practical impossibility in many instances, because they would quickly consume the available space in conduits, entrance facilities, and central office cable trays. *Id.* ¶¶ 24-26. Second, relying on metallic lines for interoffice transport would enormously increase the cost of deployment. It is highly unlikely that adequate rights-of-way exist for such facilities in many cases, because metallic lines require far more space than comparable fiber-optic facilities, and even if such rights-of-way did exist metallic lines would be prohibitively expensive both to purchase and to maintain. *Id.*[9]

For these reasons, the inability to collocate transmission functions would effectively preclude most facilities-based entry. Indeed, even if these practical considerations could be overcome, it is clear that new entrants would be impaired in their ability to offer traditional voice services on some loops. As Frontera and Hill explain, voice service requires the use of load coils when loops longer than 18,000 feet are employed. Thus most loops would require loading if new entrants were forced to extend them to a different location outside of the ILEC central office. However, "loading (which mitigates capacitance by filtering high frequencies) precludes offering some services, such as ISDN." *Id.* ¶26. In addition, as Frontera and Hill explain, "beyond 1300 to 1500 ohms, switches cannot accurately manage signaling so gain devices would be required," but "[t]hese devices, known as VG repeaters, have not been employed in loops since the 1950s." *Id.* Finally, the maximum loop length is approximately 32 miles, which would become a significant *de facto* limitation on the area that could be served by a CLEC's switch. *Id.* Thus, even if the logistical obstacles to employing metallic interoffice

[9] Reliance on DS1 or DS3 facilities for interoffice transport would present the same difficulties. *See* Frontera/Hill Decl. ¶ 27.